Articles & Publications

# The Evolution of Femoral Shaft Plating Technique

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## Abstract

There has been an evolution in the AO/ASIF plating technique during the past 3 decades that includes the use of longer plates and fewer plate screws, fewer lag screws outside the plate, fewer unicortical screws at the plate periphery, and the greater use of the 95 degree blade plate to achieve balanced fixation of proximal and distal shaft fractures. These changes reflect an evolving technique of plate osteosynthesis that emphasizes indirect reduction techniques, biologic internal fixation, and improved biomechanics.

Outcome data suggest that there has been an improvement with time that is reflected by shorter time to union, a decrease in the frequency of implant failures, delayed unions, nonunions, malunions, number of reoperations, and in overall rate of failure.

The best predictor of success was the length of plate by logistic regression analysis. With the evolution of plating techniques and a greater emphasis on biology of fracture healing, the incidence of complications and failures has decreased after femoral shaft plating. Plate osteosynthesis of the femoral shaft is particularly advantageous in many situations and can be quite successful (87% success rate in Group III)

## Case 1

Fig 1.

(A) Anteroposterior (AP) and (B) lateral radiograph showing an AO Type C proximal femoral shaft fracture from 1993

Fig 1.

(C) AP and (D) lateral radiograph 6 months postoperatively showing union with a massive callus response.

## Case 2

Fig. 2.

(A) AP injury radiograph showing an AO type C segmental femoral shaft fracture from 1994
(B) AP postoperative radiograph showing the product of indirect reduction and balanced fixation with 18 hole, 4.5mm wide, limited contact dynamic compression plate, high plate span ratio, and low plate screw density
(C) AP radiograph 4 months postoperatively showing union with a moderate callus response.